AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for configuring a microcontroller, comprising:

displaying a first graphical user interface on a display device of a computer system, said first graphical user interface comprising a collection of virtual blocks in a design system;

receiving at said computer system a selection of a user module, wherein said user module comprises information for implementing a function using a programmable physical block;

displaying on said display device a second graphical user interface operable for receiving user-specifiable information about said user module;

assigning a virtual block taken from said collection to said user module, wherein said virtual block corresponds to said programmable physical block; and

~~automatically~~ constructing completely computer-generated source code ~~comprising configuration information for said programmable physical block, wherein said configuration information is based on said user-specifiable information and comprises information~~ that is loaded into a register of said programmable physical block to cause said programmable physical block to implement said function.

2. (Original) The method of Claim 1, wherein said function comprises a pulse width modulator.

3. (Original) The method of Claim 1, wherein said function comprises a timer.

4. (Original) The method of Claim 1, wherein said function comprises an analog-to-digital converter.

5. (Original) The method of Claim 1, wherein said function comprises a digital-to-analog converter.

6. (Original) The method of Claim 1, wherein said function comprises a counter.

7. (Original) The method of Claim 1, wherein said function comprises a signal amplifier.

8. (Original) The method of Claim 1, wherein said function provides serial communication.

9. (Original) The method of Claim 1, wherein said collection is displayed as a two dimensional array of programmable analog virtual blocks and programmable digital virtual blocks.

10. (Original) The method of Claim 1, wherein said assigning further comprises assigning a second virtual block to said user module.

11. (Previously Presented) The method of Claim 1, wherein said source code comprises a symbolic name for a register address in said programmable physical block.

12. (Original) The method of Claim 11 wherein said symbolic name is derived from said function.

13. (Currently Amended) A method of configuring a microcontroller having a physical programmable block, said method comprising:

receiving, at a computer system, a selection of a user module defining a circuit design, wherein said user module comprises information for implementing a function using said programmable physical block;

displaying a graphical user interface on a display device of said computer system, said graphical user interface operable for receiving user-specifiable information about said user module, wherein said user-specifiable information comprises configuration information that is used to establish a value for a programmable characteristic of said programmable physical block;

assigning a virtual block in a design system where said virtual block corresponds to said programmable physical block; and

automatically constructing assembly code comprising said configuration information for said programmable physical block to implement said circuit design, wherein said assembly code is constructed from template assembly code by substituting said user-specifiable information and information specific to said circuit design for generic information in said template assembly code.

14. (Previously Presented) The method of Claim 13, wherein said automatically constructing further comprises:

computing a register address for a register within said programmable physical block;

determining a symbolic name for said register address, said symbolic name corresponding to said user module and said circuit design; and

substituting said symbolic name for a generic name in said template assembly code.

15. (Canceled).

16. (Previously Presented) The method of Claim 13, wherein said automatically constructing further comprises:

determining a symbolic name corresponding to said user module and said circuit design;

computing a register address for a register within said programmable physical block;

assigning said symbolic name to said register address; and

placing said symbolic name into said assembly code in place of a generic name provided in said template assembly code.

17-25. (Canceled).

26. (Currently Amended) A computer system comprising a processor coupled to a bus, a display device coupled to said bus, and a memory coupled to said bus, said memory containing instructions to implement a method for configuring a microcontroller, said method comprising:

displaying on said display device a first graphical user interface comprising a collection of virtual blocks in a design system;

receiving <u>at said computer system</u> a selection of a user module, wherein said user module comprises information for implementing a function using a programmable physical block<u>, said user module represented by first markup language data that includes information defining how configuration registers for said microcontroller are to be programmed in order to implement said function, said programmable physical block represented by second markup language data that includes information defining physical addresses of said configuration registers</u>;

displaying <u>on said display device</u> a second graphical user interface operable for receiving user-specifiable information about said user module;

assigning a virtual block taken from said collection to said user module, wherein said virtual block corresponds to said programmable physical block; and

automatically constructing assembly code holding configuration information for said programmable physical block, wherein said configuration information is based on said user-specifiable information and comprises information that is loaded into a register of said programmable physical block to cause said programmable physical block to perform said function<u>, said automatically constructing comprising</u>:

<u>linking said first markup language data and said second markup language data</u>;

<u>determining a symbolic name corresponding to said user module and said function</u>;

<u>computing a register address for a register within said programmable physical block</u>;

<u>assigning said symbolic name to said register address</u>;

<u>placing said symbolic name into said assembly code</u>;

reading template files;

substituting said user-specifiable comprising information specific to said user module, information specific to said function and information specific to a control parameter of said function for generic information in said template files to produce assembly, include and header files;

compiling said assembly, include and header files to produce an executable file;

downloading said executable file as a code block to a memory of said microcontroller; and

executing said code block to configure said programmable physical block.

27. (Original) The computer system of Claim 26, wherein said collection is displayed as a two dimensional array.

28. (Original) The computer system of Claim 26, wherein said assigning further comprises assigning a second virtual block to said user module.

29. (Previously Presented) The computer system of Claim 26, wherein said assembly code further comprises a symbolic name for a register address in said programmable physical block.

30. (Original) The computer system of Claim 26 wherein said symbolic name is derived from said function.

31-35. (Canceled).

36. (Currently Amended) The method of Claim 1 wherein said automatically constructing source code comprises:

linking said first markup language data and said second markup language data;

reading template files;

substituting said user-specifiable comprising information specific to said user module, information specific to said function and information specific to a control parameter of said function for generic information in said template files file to produce assembly, include and header files;

compiling said assembly, include and header files to produce an executable file;

downloading said executable file as a code block to a memory of said microcontroller; and

executing said code block to configure said programmable physical block.

37. (New) The method of Claim 1 wherein said user module is represented by first markup language data that includes information defining how configuration registers for said microcontroller are to be programmed in order to implement said function, and wherein said programmable physical block is represented by second markup language data that includes information defining physical addresses of said configuration registers.

38. (New) The method of Claim 14 wherein said user module is represented by first markup language data that includes information defining how configuration registers for said microcontroller are to be programmed in order to

implement said function and wherein said programmable physical block is represented by second markup language data that includes information defining physical addresses of said configuration registers, wherein further said automatically constructing further comprises:

linking said first markup language data and said second markup language data;

reading template files;

substituting said user-specifiable comprising information specific to said user module, information specific to said function and information specific to a control parameter of said function for generic information in said template files to produce assembly, include and header files;

compiling said assembly, include and header files to produce an executable file;

downloading said executable file as a code block to a memory of said microcontroller; and

executing said code block to configure said programmable physical block.